

Serial Number: 09/681,186
Filed: February 14, 2001
Group Art Unit: 2882

REMARKS

Objections

The Patent Office objected to the drawings. Applicant encloses a set of corrected drawings with this response.

Figs. 2(a) – (d) were corrected to obviate the objection specified in item 1 of the Office Action.

With regard to item 2, the last paragraph of the specification was amended to specify what reference number 15 denoted (detector for X-ray fluorescence).

With regard to item 3, it is respectfully pointed out that FIG. 1 and FIG. 3 show optical axis 28, as can be seen in the attached copy of those Figures. Segments 26 and 27 are shown in FIG. 2c, a copy of which is attached. A copy of FIG. 3a (with regard to item 4) is also enclosed with this response.

All objections to the claims due to informalities were corrected as suggested by the Patent Office.

Rejections.

Claims 1-15 are pending in the application. Claims 1-15 were amended.

The Patent Office rejected Claims 1, 6, 8-9, 12-13 under 35 U.S.C. 103(a) over Thieme et al. (U.S. Patent 5,222,113, "Thieme"), in view of Suckewer et al. (U.S. Patent 5,177,774, "Suckewer"), Nagai et al. (U.S. Patent 5,533,083, "Nagai"), Schmahl et al. ("Schmahl"). Applicant respectfully disagrees and argues as follows.

For an obviousness rejection to be proper, the Patent Office must meet the burden of establishing a prima facie case of obviousness by establishing that all elements of the invention are disclosed in the cited patents. Moreover, in accordance with *In re Lee*¹, there must be an explicit suggestion, teaching or motivation for one of ordinary skill in the art to modify a reference or combine references, as well as a reasonable expectation of success.²

The Patent Office correctly stated that most of the essential elements of the present invention claimed in Claim 1 are not disclosed in Thieme. With regard to Suckewer, that patent

¹ *In re Sang Su Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).

² *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

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discloses the X-ray beams impinging on the surface of a substrate at a predetermined angle and reflected from the surface (Abstract, Fig. 1), which is different from the imaging method which uses X-radiation transmitted through the substrate, as claimed in Claim 1 and in Claim 12. Schmahl discloses the difference between phase contrast and amplitude contrast of biological material. The biological material of Schmahl is a protein cube surrounded by water, the properties of which for the X-Ray diffraction are completely different from those of the solid state semiconductor substrate, as claimed in independent Claims 1 and 12. Schmahl states that the phase contrast is larger than the amplitude contrast within the relevant X-ray range (page 235, last paragraph – page 236 first paragraph). The wavelength as a function of the thickness of a substrate has not been considered, or even mentioned in Schmahl. Equation 16.1 describes transmission $T(x,y)$ of X-rays through the biological sample as a function of the coordinates x and y , including parameters λ (wavelength) and t (thickness). Applicant respectfully points out that thickness t is not expressed or described as a function of λ in Schmahl. λ and t are two separate and independent parameters, not depending on each other.

In contrast, independent Claims 1 and 12 claim a wavelength being a function of the thickness of the substrate. Neither Thieme, nor Suckewer nor Schmahl nor Nagai alone or combined teach or suggest or hint to a method of examining structures on a semiconductor substrate with X-ray radiation by “establishing of a wavelength or a wavelength region of the X-ray radiation as a function of the thickness”, as claimed in Claim 1. Neither Thieme, nor Suckewer nor Schmahl nor Nagai alone or combined teach or suggest or hint to an imaging X-ray microscope with “an X-radiation source generating the X-radiation having a wavelength which is a function of the thickness of the semiconductor substrate,” as claimed in independent Claim 12. Therefore, Applicant respectfully asserts that independent Claims 1 and 12 cannot be obvious over Thieme in view of Suckewer, Nagai, and Schmahl and are allowable.

Claims 6, 8-9 depend off independent Claim 1 and are allowable for the same reasons as presented above. Claim 13 depends off independent Claim 12 and is allowable for the same reasons.

Claims 2 and 7 were rejected under 35 U.S.C. 103(a) over Thieme, in view of Suckewer, Nagai, and in further view of Levine et al. (“Levine”). Applicant respectfully disagrees and asserts that Claim 2 and Claim 7 depend off now allowable independent Claim 1 and are allowable.

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Claim 3 was rejected under 35 U.S.C. 103(a) over Thieme, in view of Suckewer, Nagai, Schmahl and in further view of Levine and Schneider. Applicant respectfully disagrees and asserts that Claim 3 depends off now allowable independent Claim1 and is allowable.

Claim 4 was rejected under 35 U.S.C. 103(a) over Thieme, in view of Suckewer, Nagai, Schmahl and in further view of Schneider. Applicant respectfully disagrees and asserts that Claim 4 depends off now allowable independent Claim1 and is allowable.

Claim 5 was rejected under 35 U.S.C. 103(a) over Thieme, in view of Suckewer, Nagai, Schmahl and in further view of Levine and Schneider. Applicant respectfully disagrees and asserts that Claim 5 depends off now allowable independent Claim1 and is allowable.

Claims10 and14 were rejected under 35 U.S.C. 103(a) over Thieme, in view of Suckewer, Nagai, and Schmahl. Applicant respectfully disagrees and asserts that Claim 10 and Claim 14 depend off now allowable independent Claim1 and Claim 12, respectively, and are allowable.

Claims11 and15 were rejected under 35 U.S.C. 103(a) over Thieme, in view of Suckewer, Nagai, and Schmahl. Applicant respectfully disagrees and asserts that Claim 11 and Claim 15 depend off now allowable independent Claim1 and Claim 12, respectively, and are allowable.

CONCLUSION

The Examiner is kindly invited to telephone the undersigned to resolve any questions to expedite the allowance of the pending Claims. The listing of all Claims is presented as a complete marked-up listing (without the clean version) in accordance with the Pre-OG Notice of the Office of Patent Legal Administration of 1-31-03
(<http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/revamdtprac.htm>).

Respectfully submitted,

Maria Eliseeva

Maria Eliseeva, Reg. No. 43,328
Brown Rudnick Berlack Israels LLP
1 Financial Center
Boston, MA 02111
Phone: 617-856-8371
Fax: 617-856-8201

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